Jessica Wells

Grade 3

Filtering Water

Description: Students will use their knowledge from previous lessons on water properties and evaporation to support this experiment. The experiment will introduce the concepts of reusable water and drinkable water.

Objective: Student will be able to determine the quality of the water sample they brought in and design a filter system to purify the water. The students will be able to evaluate the value of filtered water before drinking it.

Standards:

Observe, describe, and explore the physical properties of water:

• Color, texture, odor, sound PS 3.1a,b PS 3.1c,d,e

Water is recycled by natural processes on earth. PS 3.2 a,b

• Evaporation

Materials:

* Vials
* Water samples
* Empty bottles
* Filter materials (coffee filters, cloth, sand, pebbles, clay, cotton, stockings)
* Clear open containers for evaporation
* Observation and prediction sheet
* Computer and smart board
* Video link: <http://www.youtube.com/watch?v=tuYB8nMFxQA&feature=related>

Procedure:

Part 1:

1. Students will collect a small sample of water in a vial from sources outside of school for homework prior to the experiment (dishes water, bath water, puddle water, tap water, toilet water, rain water, river water).
2. Teacher will randomly distribute water samples to the students.
3. The students will make observations of the samples, taking note of the clarity, the particles, color, and odor.
4. The students will predict where the water came from based on its properties they observed. They will also determine if they think it is drinkable or not.
5. The teacher will engage the students in a share of their ideas of how to clean the water samples. The teacher will explain that in our water system, the water needs to be cleaned, or “filtered’, before it can be drank.
6. The teacher will show the students a video on how water is cleaned: <http://www.youtube.com/watch?v=tuYB8nMFxQA&feature=related>
7. The students will use an empty bottle and filtering materials to create a filtering system, keeping a small supply of the original water unfiltered.
8. The students will compare the properties of the original sample to the filtered sample.
9. The teacher will lead the students in a discussion of what made the best filters, the results of their experiment related to their predictions and if this water is drinkable yet/what else would need to be done (recall from video).

Part 2:

1. The students will then predict what will happen when both the filtered and unfiltered water evaporates.
2. The students will watch the water samples over the next week as it evaporates.
3. The students will compare the evaporated samples. The students will determine if the filtered sample would have been drinkable based on these results and if it isn’t drinkable, what it could be used for.
4. The teacher will lead the students in a discussion of the results.
5. The students will then evaluate the value of filtering water and conserving/using undrinkable water.

Assessment:

During Part 1 of the experiment, the teacher will use an informal checklist to assess if the students are making accurate observations of the properties of water and if they are designing a filter system that can function.

After Part 2 of the experiment, the teacher will use a rubric (attached) to assess the students’ understanding of filtering water.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Water Filters

Part1:

1. Where do you think this water came from? Why?

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1. Do you think this water is drinkable? Why?

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1. Draw your filter here:
2. Draw your filtered water and unfiltered water here:

Unfiltered water: Filtered water:

Part 2:

1. What will happen when your unfiltered water evaporates?

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1. What will happen when your filtered water evaporates?

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1. Draw the evaporated filtered water and unfiltered water here:

Evaporated filtered water: Evaporated unfiltered water:

1. Is filtering water important? Why?

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**Water Filtering Rubric**

**Student name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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|  | 4 | 3 | 2 | 1 |
| Understanding | Student can precisely explain what a filtering system is used for and its value to us. | Student can mostly explain what a filtering system is used for and its value to us. | Student can explain a filtering system but not its value to us. | Student cannot explain what a filtering system is used for and its value to us. |
| Experimentation | Student works cooperatively with their peers and uses intuitive strategies when designing their filter. | Student works with their peers in a productive manner and uses some strategies when designing their filter. | Student works mostly independent of his peers and does not use appropriate strategies when designing their filter. | Student did not conduct the experiment . |